

## **REMARKS**

### **I. General**

Claims 1-25, 28-31, and 35 are presently pending in the application. Claim 35 is new. Claims 33 and 34 are now canceled. The issues in the current office action are as follows:

- The drawings are objected to under 37 C.F.R. § 1.83(a).
- Claims 1, 6, 7, 10, and 11 are rejected under 35 U.S.C. § 102(b) as being anticipated by US 6,491,634 (hereinafter *Leavitt*).
- Claims 2, 3, 5, 8, 9, and 29-31 are rejected under 35 U.S.C. § 103(a) as being unpatentable over *Leavitt* in view of US 6,695,783 (hereinafter *Henderson*).
- Claims 12 and 13 are rejected under 35 U.S.C. § 103(a) as being unpatentable over *Leavitt* in view of US 2003/0185205 (hereinafter *Beshai*).
- Claims 14, 19, and 20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over *Leavitt* and *Beshai* in further view of *Henderson*.

Applicant notes with appreciation the allowance of claims 25 and 28 and the conditional allowance of claims 33 and 34, and appreciates the courtesy and professionalism extended by the Examiner thus far. Applicant hereby traverses the objections and rejections and requests reconsideration and withdrawal in light of the amendments and remarks contained herein.

### **II. Applicant's Record of Interview with Examiner**

Applicant's attorney appreciates the Examiner's time and consideration in conducting a telephone interview on May 12, 2010. Applicant respectfully submits the following record of the telephone interview under M.P.E.P. § 713.04.

**A. Interview Participants**

The following persons participated in the interview: Examiner Phuc Tran and Applicant's Attorneys Thomas Kelton (Reg. No. 54,214) and Brandy Nolan (Reg. No. 64,649).

**B. Issues Discussed**

Independent claim 1 stands rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,491,634 to *Leavitt* et al. Mr. Kelton discussed the rejection of claim 1 in view of *Leavitt* and offered a potential amendment to clarify what Applicant claims. Specifically, the following language was discussed for claim 1:

1. A system comprising:

an application specific integrated circuit (ASIC) comprising a plurality of components for providing a first level of signal channel reduction and a second level of signal channel reduction, wherein said first and second levels of signal channel reduction are achieved by selecting which of said components to enable.

Applicant's attorneys showed that *Leavitt* does not teach different levels of signal channel reduction. It was agreed that an amendment with the type of language recited above would overcome the rejection of record for claim 1 over *Leavitt*.

**III. Objections to the Drawings**

The drawings are objected to under 37 C.F.R. § 1.83(a) as failing to depict, with reference to the features of claim 2, a first configuration to provide N to M signal multiplexing and a second configuration to provide N to M/2 multiplexing. *See* Office Action at 2. Applicant respectfully traverses the objection.

The exemplary embodiment depicted in Figure 2A teaches an ASIC 210 configured to provide N to M signal multiplexing. In this configuration, ASIC 210 includes, for example, 2:1

multiplexors (“muxes”) 215 and 216, which are each enabled during a receive operation, such that for every two signal inputs, there is only one signal output. *See* Application at [0028]. Further, the exemplary embodiment depicted in Figure 2B teaches the same ASIC 210 configured to provide N to M/2 signal multiplexing. In this configuration, lines from multiplexors 215 and 216 to beam former 221 are tied together such that for every four signal inputs, there is only one signal output. *See id.* at [0030]. Hence, by pairing 2:1 muxes 215 and 216, the ASIC provides 4:1 multiplexing. *Id.* In addition, alternative embodiments may group together more than two 2:1 muxes, such as four or eight, to provide 8:1 or 16:1 multiplexing functionality. *Id.* Thus, Figures 2A and 2B depict an ASIC configured to provide N to M signal multiplexing and N to M/2 signal multiplexing as claimed in amended claim 2. Because the drawings comply with the provisions of 37 C.F.R. § 1.83(a), no amendment to the drawings is submitted at this time and Applicant respectfully requests that the objection of record be withdrawn.

#### **IV. Claim Amendments**

Claim 1 has been amended consistent with language discussed with Examiner Tran during the May 12, 2010 phone interview. Support for these amendments can be found at least at paragraphs [0020]-[0021], [0028], and [0030] of the Application. For example, the Application states, “By selectively enabling one of muxes 215 and 216 during a receive operation, 2:1 muxes 215 and 216 act together as a 4:1 mux . . . .” Application at [0030]. Further, for example, the Application describes, “Alternative embodiments may group together more than two 2:1 muxes . . . to provide 8:1 or 16:1 mux.” *Id.* Therefore, these amendments add no new subject matter.

Claim 2 has been amended to recite, in part, “a plurality of multiplexors providing N to M signal multiplexing, wherein in the first level of signal channel reduction said ASIC is configured to provide N to M signal multiplexing, and wherein in the second level of signal channel reduction said ASIC is configured to provide N to M/2 signal multiplexing.” Support

for this amendment can be found at least at paragraphs [0021], [0028], and [0030] of the Application. Therefore, this amendment adds no new subject matter.

Claim 3 has been amended to provide proper antecedent basis for its features.

Claim 6 has been amended to recite, in part, “a circuit configurable to provide a cross-point switch function in the first level of signal channel reduction and to provide a signal summer function in the second level of signal channel reduction.” Support for this amendment can be found at least at paragraphs [0032]-[0034], [0037]-[0038]. For example, the Application describes how ASIC 310 may perform a summing function by pairing signal channels. Application at [0032]. Further, the same ASIC also has circuitry for performing cross-point-switch functions to direct signal channels to multiple beam formers. *Id.* at [0038]. Thus, this amendment adds no new subject matter.

Claim 10 has been amended to recite, in part, “an application specific integrated circuit (ASIC) comprising circuitry enabling selection of a first level of signal channel reduction in a first circuit configuration and enabling selection of a second level of signal channel reduction in a second circuit configuration.” Support for this amendment can be found at least at paragraphs [0032]-[0034], [0037]-[0038] of the Application. Therefore, this amendment adds no new subject matter.

Claim 12 has been amended to recite, in part, “configuring the ASIC to provide the determined number of signal channels by selecting one or more components in the ASIC to provide the first or second level of signal channel reduction.” Support for this amendment can be found at least at paragraphs [0020]-[0021], [0028], and [0030] of the Application. Therefore, this amendment adds no new subject matter.

Claim 13 has been amended into dependent claim format. Support for this amendment can be found at least at paragraph [0024]. Therefore, this amendment adds no new subject matter.

Claims 33 and 34 are objected to as being dependent upon a rejected base claim. The Examiner noted that these claims would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Office Action at 9. Claims 33 and 34 both directly depend from claim 29. Accordingly, Applicant has amended claim 29 to incorporate the limitations of claim 33 and has canceled claim 33. Further, Applicant has added new claim 35, which incorporates the limitations of claim 29 and claim 34, and has canceled claim 34. These amendments should moot any objection to claims 33 and 34. These amendments add no new subject matter.

**V. Claim Rejections**

**A. 35 U.S.C. § 102(b) Rejections**

**1. Claims 1, 6, 7, 10, and 11 in view of *Leavitt***

On pages 3-4 of the Office Action, claims 1, 6, 7, 10, and 11 are rejected under 35 U.S.C. § 102(b) as being anticipated by *Leavitt*. Applicant respectfully traverses the rejection. To anticipate a claim under 35 U.S.C. § 102, a reference must teach every element of the claim. M.P.E.P. § 2131 (citing *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987)). As discussed further below, this requirement is not satisfied by the 35 U.S.C. § 102 rejection because *Leavitt* does not teach every element of the claims.

Independent claim 1 has been amended to recite “an application specific integrated circuit (ASIC) comprising a plurality of components for providing a first level of signal channel reduction and a second level of signal channel reduction, wherein said first and second levels of signal channel reduction are achieved by selecting which of said components to enable.” In contrast, *Leavitt* merely describes a system where a plurality of sub-beamformers reduce a number of signals from 48 to 6. *Leavitt* at Col. 4, Lines 38-65. *Leavitt* does not teach the same ASIC providing different levels of signal channel reduction. It necessarily follows that *Leavitt*

also does not teach that the first *and* second levels of channel reduction are achieved by selecting which of said components to enable in the same ASIC. As such, *Leavitt* fails to teach every limitation of claim 1, and Applicant respectfully requests withdrawal of the § 102(b) rejection of claim 1.

Independent claim 10 has been amended to recite, in part “an application specific integrated circuit (ASIC) comprising circuitry enabling selection of a first level of signal channel reduction in a first circuit configuration and enabling selection of a second level of signal channel reduction in a second circuit configuration.” As described with respect to claim 1, *Leavitt* does not teach the same ASIC providing different levels of signal channel reduction. It necessarily follows that *Leavitt* also does not teach a first *and* second circuit configuration of the same ASIC for achieving a first and second level of signal channel reduction, respectively. As such, *Leavitt* fails to teach every limitation of claim 10, and Applicant respectfully requests withdrawal of the § 102(b) rejection of claim 10.

Dependent claims 6, 7, and 11 each depend either directly or indirectly from independent claims 1 and 10 and, thus, inherit all of the limitations of their respective base claims. It is respectfully submitted that dependent claims 6, 7, and 11 are allowable at least because of their dependence from claims 1 and 10 for the reasons discussed above. Furthermore, various dependent claims recite features that are patentable for reasons independent of those presented above for the independent claims.

For example, dependent claim 6 has been amended to recite “a circuit configurable to provide a cross-point switch function in the first level of signal channel reduction and to provide a signal summer function in the second level of signal channel reduction.” As discussed above, *Leavitt* merely describes a system where a plurality of sub-beamformers reduce a number of signals from 48 to 6. *Leavitt* at Col. 4, Lines 38-65. *Leavitt*, however, does not teach the same ASIC providing two levels of signal channel reduction. Further, *Leavitt* does not teach a cross-point switch function in addition to a summing function. The Office Action points to Figure 3 of

*Leavitt* as showing the cross-point switch function. Office Action at 10. Further, the Office Action states, “In summary of Applicant, paragraph 7, Applicant discloses the bank of multiplexors or as a summer/cross-point switch. . . .” *Id.* However, Figure 3 of *Leavitt* merely illustrates a summing function, i.e., six signals entering summing elements 320-1 through 320-6. *Leavitt* at Col. 6, Lines 26-35. No additional cross-point switch function is depicted or described. As such, *Leavitt* fails to teach every limitation of amended claim 6.

Additionally, dependent claim 7 recites “wherein said cross-point switch function comprises selectively routing signal channels to one or more beam formers.” The Office Action cites to the “signals from ASIC to beam former in Fig. 2 and Fig. 3” of *Leavitt* as satisfying this limitation. Office Action at 3. At Figure 2 of *Leavitt*, all 48 signals are maintained along a signal path at elements 204, 208, 212, and 216 before delivery to sub beamformer 218, where these signals are combined into a smaller number of delayed sub-array signals. *Leavitt* at Fig. 2. Further, at Figure 3 of *Leavitt*, there is merely depicted summation of the 48 signals into 6 signals. *Id.* at Fig. 3. Thus, the recited Figures and their accompanying descriptions do not teach a cross-point switch function comprising selectively routing signal channels. Moreover, *Leavitt* does not disclose that an ASIC performs a cross-point switch function. Specifically, *Leavitt* explicitly states the functions that the ASIC 210 performs—power amplification, filtering, and front-end gain compensation—and selectively routing signals is not among the list of functions. *See id.* at Col. 4, Lines 16-18. As such, *Leavitt* fails to teach every limitation of claim 7.

Further, dependent claim 11 recites, in part “wherein the application further comprises a signal processing unit . . . in communication with the data path at a number of points thereon and is operable to capture and insert information in the data path at each of the number of points.” The Office Action points to the processor 258 in Figure 2 of *Leavitt* as satisfying this limitation. Office Action at 4. However, processor 258 is merely depicted as having one input and one output in the signal path. *See Leavitt* at Figure 2, Element 252. Further, the description of processor 258 does not indicate an ability to communicate with the data path at a *number of points* thereon nor an ability to capture and insert information at a number of points. *See id.* at

Col. 5, Lines 15-30. As such, *Leavitt* fails to teach every limitation of claim 11. Accordingly, Applicant respectfully requests the withdrawal of the § 102(b) rejections for claims 6, 7, and 11.

## **2. Claim 4**

Claim 4, although indicated as rejected in the Office Action Summary, is not specifically addressed within the body of the Office Action. Accordingly, Applicant respectfully points out that the current Office Action does not comport with Office policy. Specifically, Office policy directs that “[t]he examiner’s action will be complete as to all matters, except that in appropriate circumstances, such as misjoinder of invention, fundamental defects in the application, and the like, the action of the examiner may be limited to such matters before further action is made.” M.P.E.P. § 707.07 (quoting 37 C.F.R. § 1.104). As such, the Office Action is not complete as to all matters. Applicant, therefore, requests that the Examiner set forth the grounds for rejection or reasons for allowance with respect to claim 4 so Applicant may have a full and fair opportunity to explore the patentability of this claim.

### **B. 35 U.S.C. § 103(a) Rejections**

The test for non-obvious subject matter is whether the differences between the subject matter and the prior art are such that the claimed subject matter as a whole would have been obvious to a person having ordinary skill in the art to which the subject matter pertains. The United States Supreme Court in *Graham v. John Deere and Co.*, 383 U.S. 1 (1966) set forth the factual inquiries which must be considered in applying the statutory test: (1) determining the scope and content of the prior art; (2) ascertaining the differences between the prior art and the claims at issue; and (3) resolving the level of ordinary skill in the pertinent art. As discussed further hereafter, Applicant respectfully asserts that the claims include non-obvious differences over the cited art.



**1. Claims 2, 3, 5, 8, 9, 29-31 in view of *Leavitt* and *Henderson***

On pages 4-7 of the Office Action, claims 2, 3, 5, 8, 9, and 29-31 are rejected under 35 U.S.C. § 103(a) as being unpatentable over *Leavitt* in view of *Henderson*. Applicant respectfully traverses the rejections.

As discussed above, *Leavitt* does not teach every aspect of independent claim 1. Dependent claims 2, 3, 5, 8, and 9 each depend directly or indirectly from independent claim 1 and, thus, inherit all limitations of independent claim 1. As such, *Leavitt* does not teach every limitation of claims 2, 3, 5, 8, and 9. Furthermore, the cited portions of *Henderson* do not cure the deficiencies noted above with respect to *Leavitt* and claim 1. Therefore, it is respectfully submitted that dependent claims 2, 3, 5, 8, and 9 are allowable at least because of their dependence from claim 1.

As noted above, the Examiner indicated that claims 33 and 34 contained allowable subject matter. Office Action at 9. Accordingly, independent claim 29 has been amended to incorporate the features of claim 33. Likewise, new independent claim 35 has been added to incorporate the features of claim 29 and claim 34. Therefore, the § 103(a) rejection of claim 29 is moot.

Further, dependent claims 30 and 31 each depend directly and indirectly, respectively, from claim 29 and, thus, inherit every limitation of independent claim 29. As noted above, claim 29, as amended, contains allowable subject matter. Therefore, it is respectfully submitted that dependent claims 30 and 31 are allowable at least because of their dependence from claim 29. Accordingly, Applicant respectfully requests withdrawal of the § 103(a) rejection of claims 30 and 31.

**C. Claims 12 and 13 in view of *Leavitt* and *Beshai*; claims 15-18, 21, and 22-24**

On pages 7-8 of the Office Action, claims 12 and 13 are rejected under 35 U.S.C. § 103(a) as being unpatentable over *Leavitt* in view of *Beshai*. Applicant respectfully traverses the rejections.

Claim 12 has been amended to recite, in part, “configuring the ASIC to provide the determined number of signal channels by selecting one or more components in the ASIC to provide the first or second level of signal channel reduction.” Neither *Leavitt* nor *Beshai* teach the above recited limitation. *Beshai* teaches, “The capacity of a path is determined as a number of channels . . .” *Beshai* at [0023]. However, neither *Leavitt* nor *Beshai* teach selecting components in an ASIC to provide a determined number of signal channels. Further, as discussed above, *Leavitt* does not teach both a first and second level of channel reduction. Accordingly, *Leavitt* does not (and has no need to) teach, determining a number of signal channels by selecting one or more components in the ASIC. As such, the proposed combination of *Leavitt* and *Beshai* does not teach every limitation of amended claim 12. Therefore, Applicant respectfully requests the withdrawal of the rejection § 103(a) rejection of claim 12.

As noted above, claim 12 includes features that are not taught by the combination of *Leavitt* and *Beshai*. Claim 13 depends directly from claim 12 and, thus, inherits every limitation of claim 12. Thus, the combination of *Leavitt* and *Beshai* does not teach every limitation of claim 13. It is respectfully submitted that claim 13 is at least allowable because of its dependence from claim 12 for the reasons set forth above. Therefore, Applicant respectfully requests withdrawal of the § 103(a) rejection of claim 13.

Finally, claims 15-18, 21, and 22-24, although indicated as rejected in the Office Action Summary, are not specifically addressed within the body of the Office Action. Accordingly, Applicant respectfully points out that the current Office Action does not comport with Office policy. Specifically, Office policy directs that “[t]he examiner’s action will be complete as to all matters, except that in appropriate circumstances, such as misjoinder of invention, fundamental defects in the application, and the like, the action of the examiner may be limited to such matters before further action is made.” M.P.E.P. § 707.07 (quoting 37 C.F.R. §1.104). As such, the Office Action is not complete as to all matters. Applicant, therefore, requests that the Examiner set forth the grounds for rejection or reasons for allowance with respect to claims 15-18, 21, and 22-24 so Applicant may have a full and fair opportunity to explore the patentability of these claims.

**D. Claims 14, 19, and 20 in view of *Leavitt*, *Beshai*, and *Henderson***

On pages 8-9 of the Office Action, claims 14, 19, and 20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over *Leavitt* and *Beshai* in further view of *Henderson*. Applicant respectfully traverses the rejection.

Dependent claims 14, 19, and 20 each depend either directly or indirectly from independent claim 12 and, thus, inherit all of the limitations of claim 12. It is respectfully submitted that dependent claims 14, 19, and 20 are allowable at least because of their dependence from claim 12 for the reasons discussed above. Accordingly, Applicant respectfully requests the withdrawal of the § 103(a) rejection of claims 14, 19, and 20.

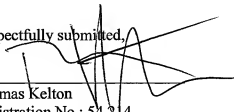
**VI. Conclusion**

In view of the above, Applicant believes the pending application is in condition for allowance. Applicant submits fees in the amount of \$220 for one independent claim. Please charge any additional fees required or credit any overpayment to Deposit Account No. 06-2380, under Order No. 65744/P018US/10404217 during the pendency of this Application pursuant to

37 CFR 1.16 through 1.21 inclusive, and any other sections in Title 37 of the Code of Federal Regulations that may regulate fees.

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Respectfully submitted,

By   
Thomas Kelton  
Registration No.: 54,214  
FULBRIGHT & JAWORSKI L.L.P.  
2200 Ross Avenue, Suite 2800  
Dallas, Texas 75201-2784  
(214) 855-7115  
(214) 855-8200 (Fax)  
Attorney for Applicant